

testify. Mr. Davis recited his experience and gave it as his opinion that the block system is simply an auxiliary to the time table and train orders.

"What benefit did the Vandalia reap from its block signal system?" he was asked.

"It accelerated the train service and reduced the number of accidents."

"Is there any better device than the block signal system?"

"I don't know of any."

"With all this block signal, manual, controlled manual, and all that, isn't it possible for a train to get in on a block?"

"Yes. The New Haven is now offering \$10,000 for some one who will invent a device that will automatically stop a train that runs over a block."

Chairman Taylor wanted to know which was the best, the manual block signal or the automatic.

"Men differ on that like they do on questions of politics and religion. For a busy single track road I prefer the manual."

Daniel W. Rosenswig, superintendent of signals on the Southern Pacific at Lafayette, testified to the block system as being an aid in the operation of trains, and particularly in preventing certain classes of accidents, such as are caused by broken rails, open switches, open drawbridges and similar causes.

Documents filed with the commission showed that on the New Orleans and Northwestern there are about 40 miles equipped with the block system, the automatic being in use. It was begun in 1910, completed in 1912, and cost \$147,097.46. It was installed by order of the Louisiana Railroad Commission.

On the St. Louis, Iron Mountain and Southern main line the manual block system is installed from Little Rock to Alexander, 144.87 miles, and was voluntarily established.

On Morgan's Louisiana & Texas line there are 95.3 miles of automatic electric block signals in operation, installed since 1904, and cost \$1,117.62 per mile and \$55 per mile per annum to maintain and \$70 per mile per annum to operate.

On the Louisiana Western there are 103.6 miles of automatic electric signals, installed since 1906, costing \$1,117.62 per mile and \$55 per mile to maintain and \$70 per mile annually to operate.

On the Illinois Central there are 12.7 miles of automatic and three miles of staff system. The automatic was installed in 1911 and the staff in 1909. The cost of installation, including 11.7 miles on the Yazoo & Mississippi Valley road, was \$27,501.09 for the automatic and \$1,095.30 for the staff. The maintenance cost amounts to \$1,492.69 and the operation \$1,068.15 per year.

On the Louisville & Nashville there is no block system in Louisiana, except at the end of double track, six miles from Canal street, where there is a tower and continuous operator service. Three miles from the city at the crossing of the Northeastern is an interlocking tower, and three-quarters of a mile nearer the city there is another, at the Terminal line crossing.

On the St. Louis Southwestern there are forty-four tenths of a mile that cost \$1,105.07, and about \$66 per year to maintain and \$12 per year to operate.

NEW WORK ON THE MISSOURI, KANSAS & TEXAS.

The Missouri, Kansas & Texas is planning, in connection with the extensive improvements which will be made this year, to install automatic signals between Hillsboro and Granger, Denison passenger depot and Red River, and the Houston & Texas Central crossing north of Dallas and Dallas. These three installations will cost about \$140,000. Automatic signals will be installed at Paris and Sweney, Mo.—there being two signals at each point—at a total cost of \$3,600. The automatic signals will be put in on the basis of one mile blocks, and will be operated from portable storage batteries of the Edison type. The block signals will also be electric lighted, using current from the storage cells. The charging plant will be located at Waco.

Interlocking plants will be installed at West Point, where the M. K. & T. crosses the San Antonio & Aransas Pass; at Elgin,

where the Houston & Texas Central crosses; at New Braunfels, at the crossing of the International & Great Northern, and in the Denison yards at the crossing of the H. & T. C. The Elgin plant will be built by the H. & T. C., and the New Braunfels plant by the I. & G. N. The cost of the two plants which the M. K. & T. will install will aggregate about \$25,000.

Mechanical crossing gates will be installed at Cedar Springs Road in Dallas at a cost of about \$500. Electric crossing gates will be installed at McKinney avenue, Dallas, and at four streets in Waco, Tex. The total cost of the eight installations will be \$6,700. Highway crossing bells will be erected at 12 streets in Greenville, Tex., and at Dallas and Alvarado, Tex., and Coffeyville and Parsons, Kan. The cost of the Greenville bells will be about \$3,000, and the other installations will average \$350 each.

A. C. SIGNALING ON THE SANTA FE.

The Atchison, Topeka & Santa Fe has a large amount of block signaling and interlocking work now under way. West of Albuquerque, N. M., about \$700,000 worth of alternating current signaling, alone, is now under construction. All of the alternating current automatic block signaling that the Santa Fe is doing is being installed on double track, and the scheme used on the Cottonwood-Daggett installation, which was described on page 68 of *The Signal Engineer* for March, 1912, is being followed.

Included in the new signaling work are the following stretches which are to be protected on the Coast Lines: San Bernardino to Keenbrook, Fresno to Calwa, Needles to M. P. 575, Yampia to Seligman, Flagstaff to Ash Fork, Winslow to Cactus, Baca to Perea, Horace to McCarty's and Rio Puerco to Suwanee. Crossing bells are to be installed at Riverside on the Los Angeles division, and at Empire and Richmond on the Valley division. The staff system is to be installed between Bakersfield and Kern Junction on the Valley division. "Automatic flagmen" of the type made by the Automatic Flagman Company, Los Angeles, Cal., and described on page 439 of *The Signal Engineer* for December, 1912, are to be installed at Azusa, Anaheim, Pasadena, Santa Ana, and at Slauson avenue, Los Angeles, on the Los Angeles division, and at Bakersfield on the Valley division. Other small installations and some rearrangements of interlocking plants and pole lines are also to be undertaken in the near future.

THE AGA FLASHLIGHT A SUCCESS IN SWEDEN.

In the *Railway Gazette* for March 8 last appeared a description of the AGA flashlight for making distinctions in railway signals, which was undergoing a trial on the Swedish State Railways. This test was commenced in October, 1911, and after the expiration of a year it has been decided that, the results being so satisfactory, the system shall be forthwith extended to cover the line between Stockholm Central Station and Saltskog. A new type of signal has been designed by E. G. Windahl, the signal engineer of the State Railways, which gives an additional indication to show when a train may run through a station without calling, and the new signal is known as a through-passage signal. This has been made possible by the use at night of the flashlight combined with red, green, and yellow lights. The new indication is given at the distant and stop signals. When the distant is at danger a flashing yellow light is given. When the distant is cleared along with the main-line signals there is a flashing green light, and where it is cleared for the diverging line home signal there is an upper flashing green light and a lower steady green light. The latter light at all other times is hidden and low, and it is deposed and the light automatically turned up as the distant is cleared for the diverging line. The distant flash-light has 60 flashes per minute, and is 1.1 sec. light and .9 sec. dark. The home signal at danger has one steady red light; for main line clear into the station a steady green and a flashing yellow light; for main line clear through the station, the flashing yellow changes to

flashing green. If the road is set for the diverging line and the line is clear into the station an additional steady green light comes between the green and yellow, and if the line be clear through the station there are two steady greens and the flashing yellow changes to flashing green. For stop signals there are 85 flashes per minute, and the duration is .1 sec. light .6 sec. dark.—*Railway Gazette (London.)*

GRAND CHIEF STONE AND SURPRISE TESTS.

The New York, New Haven & Hartford has issued a new order in regard to surprise tests of enginemen, and the requirements, as outlined in the order, are printed in the *Locomotive Engineer's Journal*. Mr. Stone, grand chief engineer of the brotherhood, criticizes some of these tests as dangerous. He refers particularly to turning switch lights so as to indicate red when an engineman is approaching the switch at high speed. Enginemen in such circumstances, he says, have troubles enough already. The New Haven road requires these tests to be made only where the engineman will have a long view of the switch light; but Mr. Stone says that a road in the west, a few years ago, tried this method and, within a few months, it was found that local officers making such tests selected the worst places that they could find. After two men had been injured by jumping off engines it was discontinued. Mr. Stone calls for national legislation making it a criminal offense to test enginemen in the way described.

Among the things to be done to test men on the New Haven road are the following: Train orders improperly made out; clearance blanks improperly made out; train orders improperly repeated; markers improperly displayed; wrong whistle-signal given to come in; fixed signals clear with red flag in tower; lights removed from signals; blade removed from signal; signal arms half way between stop and clear; train order signals turned to the stop position after the engine has passed; block signal at clear when passed and then changed to stop, while work is being done at the station; and changing of switch light to show red instead of green.

MR. BELNAP ON THE MONTZ AND IRVINGTON COLLISIONS.

The Interstate Commerce Commission has issued the report of Chief Inspector Belnap on the rear collision on the Yazoo & Mississippi Valley, at Montz, La., November 12, in which 15 passengers were killed and 249 were injured. The report contains a detailed statement of the circumstances attending the collision, but contains only a few items of importance in addition to facts already published. It appears that the flagman, whose neglect was the immediate cause of the collision, and who was only 19 years old, had worked for the company about six years and had been employed as a section foreman for two years before he entered the train service. The engineman of the freight train, who was held responsible for running much faster than 25 miles an hour, the limit of speed prescribed for his train, had been in service since 1900 and had been engineman since 1906. He had been disciplined twice for responsibility for collisions: in April, 1908, and December, 1910. Mr. Belnap calls attention to the fact that the ten minute time interval prescribed by the rule does not afford safety at night when open telegraph offices are long distances apart. Referring to the reason given by the road for not using the block system—that all the available money was being used on portions of the road where traffic conditions more urgently required the block system, he says: "This argument, of course, applies only to the automatic block system. There is no reason why a manual block system could not be introduced on this division, the maintenance of a few more night offices being all that would be required to secure the additional factor of safety afforded by such a block system."

The report on the butting collision between a passenger train and a freight which occurred on the Cincinnati, Hamilton &

Dayton at Irvington, within the limits of the city of Indianapolis, Ind., November 13, about 3 a. m., resulting in the death of 11 passengers and four employees and the injury of six passengers and five employees, has also been issued. Westbound passenger train No. 36 ran over a misplaced switch, and into the head of an eastbound freight train standing on a side track. The conclusions of the inspector are that engineman Yorke, of the freight, failed to close the switch or to make sure that it had been closed; that brakeman Gross is equally responsible, he having failed to see that the switch was closed and also erroneously stated that the switch had been closed, when asked about it. Yorke also exercised poor judgment in calling in the flagman before the switch had been closed. The conductor and both brakemen displayed a lack of alertness in not relighting the switch. In conclusion the report says:

"Measures should at once be taken to provide that switch lamps be kept burning at night, and that employees be required to obey the rules in the absence of a switch light. In addition to reporting switch lamps found not burning, any employee who uses switches at night on which the lamps are not burning should be required to light them.

"It cannot be considered safe practice to require or permit a train to be operated over a busy railroad by a crew all of whom on the head end of the train are inexperienced or new men; and in all cases where newly promoted enginemen are used an experienced fireman should be furnished.

"The tonnage rating of engines should be fixed so that an engine can haul a train over the road without being required frequently to double hills. When trains are required frequently to double hills, the attention of employees, anxious to make reasonable time and to avoid delaying other trains, is diverted from their usual duties, and ordinary precautions are overlooked. Under these circumstances there are unusual opportunities for disastrous errors to occur.

"... Had automatic block signals, or any form of signals employing continuous track circuits, been in use the open switch would have been indicated by such signals and, had they been obeyed, the accident would have been averted."

COLLISION ON NEW YORK ELEVATED.

A rear-end collision on the Third avenue elevated line of the Interborough Rapid Transit Company, New York, at Thirty-second street, on January 25, 1913, resulted in the death of one person (a policeman) and the injury of a score or more. The leading train was at a standstill. The other was running slowly but the rear car of the leading train and the front car of the following one were badly crushed at the ends, and the policeman, riding in the second train and sitting immediately behind the motorman's box, was stunned, his body was jammed under the seat in the motorman's box, and the car taking fire immediately from a short circuit, it is believed that he was burned to death. From the testimony of a passenger it seems that the motorman had neglected to keep a good lookout, the train ahead having been in sight for some distance. This is the second time in the history of the road—the second time in 35 years—that the elevated railroads of Manhattan, New York City, have had a train accident in which a passenger was killed. Seven years ago a number of passengers were killed at Fifty-third street and Ninth avenue, when a car fell off the elevated structure because of too high speed on a sharp curve. For many years these roads have carried over 500,000 passengers a day, and many times a million in one day. The Interborough is now planning to equip the elevated lines with automatic stops similar to those used in the subway.

MILEAGE OF RAILWAYS BLOCK SIGNALLED.

The following table showing percentages of railways block signaled is more correct (and more recent) than the one published on page 2 of *The Signal Engineer* for January, 1913. It shows the percentages as of January 1, 1913, and includes all